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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,704	11/29/2001	Jong Won Seok	P67356US0	2611

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EXAMINER

HENNING, MATTHEW T

ART UNIT	PAPER NUMBER
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2131

DATE MAILED: 08/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/995,704

Applicant(s)

SEOK ET AL

Examiner

Matthew T. Henning

Art Unit

2131

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1 This action is in response to the communication filed on 6/17/2005.

2 **DETAILED ACTION**

3 *Response to Arguments*

4 Applicants' arguments filed 6/17/2005 have been fully considered but they are not
5 persuasive. Applicants argue primarily that:

6 a. Lee does not disclose outputting a residual signal of a delayed original audio
7 signal.

8 b. Hannigan does not disclose a delayed original audio signal.

9 Regarding applicants' argument a., that Lee does not disclose outputting a residual signal
10 of a delayed original audio signal, has been considered and is not found persuasive. Lee
11 disclosed an original noise (or audio) signal PN being input into a multiplier prior to being
12 filtered (See Lee Col. 10 Lines 5-18 and Fig. 5 Elements 90, 92, and 94). It was inherent that the
13 signal passing through the multiplier was delayed due to the propagation delay through the
14 multiplier. Therefore, an original audio signal, the pseudorandom noise signal, was delayed
15 prior to filtering via the prediction coefficients. Therefore, the examiner does not find the
16 argument persuasive.

17 In response to applicants' argument b., that Hannigan does not disclose a delayed original
18 audio signal, the recitation "using an echo signal of a delayed original audio signal that is
19 delayed for a predetermined delay time" has not been given patentable weight because the
20 recitation occurs in the preamble. A preamble is generally not accorded any patentable weight
21 where it merely recites the purpose of a process or the intended use of a structure, and where the
22 body of the claim does not depend on the preamble for completeness but, instead, the process

steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Therefore the argument is not found persuasive.

Because the applicants' arguments have not been found persuasive, the prior art rejections of claims 1-14 have been maintained, as shown below.

The rejections of claims 9-14 under 35 USC 112 2nd Paragraph have been withdrawn due to the amendments to the claims.

Claims 1-14 have been examined.

All objections and rejections not specified below have been withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (US Patent Number 5,822,360) hereinafter referred to as Lee.

Regarding claim 1, Lee disclosed an apparatus for embedding a watermark into an original audio signal, comprising: a linear prediction analysis means for generating a prediction coefficient of the original audio signal by means of a linear prediction analysis after the original audio has been inputted thereto (See Lee Col 10 Lines 19-25); a residual signal output means for outputting a residual signal of a delayed original audio signal by filtering the delayed original audio signal

1 using the prediction coefficient generated from the linear prediction analysis means (See Lee
2 Col. 10 Lines 10-18); an echo signal generation means for generating an echo signal of the
3 original audio signal by synthesizing the prediction coefficient of the original audio signal and
4 the residual signal of the delayed required audio signal (See Lee Col. 10 Lines 26-53); and a
5 copyright information insertion means for generating a watermarked audio signal by combining
6 the original audio signal and the echo signal of the original audio signal having copyright
7 information therein (See Lee Col. 2 Lines 22-39, and Col. 10 Lines 62-65).

8 Regarding claim 2, Lee disclosed that the linear prediction analysis means generates the
9 prediction coefficient, which is able to predict an inherent spectrum of the audio by virtue of the
10 linear prediction analysis (See Lee Col. 10 Lines 19-25).

11 Regarding claim 5, Lee disclosed that the echo signal generation means is a linear
12 prediction synthesis filter for outputting the echo signal of the original audio signal by
13 synthesizing the prediction coefficient of the original audio signal outputted from the linear
14 prediction analysis means and the residual signal of the delayed original audio signal outputted
15 from the residual signal output means (See Lee Col. 10 Lines 10-39).

16 ***Claim Rejections - 35 USC § 103***

17 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
18 obviousness rejections set forth in this Office action:

19 *A patent may not be obtained though the invention is not identically disclosed or*
20 *described as set forth in section 102 of this title, if the differences between the subject matter*
21 *sought to be patented and the prior art are such that the subject matter as a whole would have*
22 *been obvious at the time the invention was made to a person having ordinary skill in the art to*
23 *which said subject matter pertains. Patentability shall not be negated by the manner in which*
24 *the invention was made.*
25

1 Claims 3-4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as
2 applied to claim 1 above, and further in view of Hannigan et al. (US Patent Number 6,674,876)
3 hereinafter referred to as Hannigan.

4 Regarding claims 3 and 4, Lee disclosed a linear prediction analysis filter for outputting
5 the residual signal by eliminating the inherent spectrum of the delayed original audio signal after
6 filtering the delayed original audio signal using the prediction coefficient (See Lee Col. 10 Lines
7 10-39), but failed to disclose a means for delaying the original signal for a predetermined time,
8 and the time being the key to detecting the watermark.

9 Hannigan teaches that in an audio watermarking system, the original signal can be
10 delayed by predetermined amounts and then added to the original signal in order to embed the
11 watermark, and that the delay times are the key to the watermark (See Hannigan Col. 8 Lines 17-
12 32).

13 It would have been obvious to the ordinary person skilled in the art at the time of
14 invention to employ the teachings of Hannigan in the watermarking system of Lee by delaying
15 the original signal by predetermined amounts in order to embed a watermark in the signal. This
16 would have been obvious because the ordinary person skilled in the art would have been
17 motivated to provide additional messages in the watermarked audio.

18 Regarding claims 6-8, Lee disclosed an error correction encoder for granting an error
19 correction function to the copyright information embedded into the original audio signal (See
20 Lee Col. 9 Line 65 – Col. 10 Line 2); and a summer for outputting a watermarked audio signal
21 by adding a signal outputted from the watermark generator the original audio signal (See Lee

Col. 10 Lines 62-65). However, Lee failed to disclose generating the sign of the watermark data based on the message data.

Hannigan teaches that in a watermarking system, the watermark data can be added or subtracted from the original signal depending on the data to be embedded and that a binary 1 would be added and a binary 0 would be subtracted (See Hannigan Col. 8 Line 60 – Col. 9 Line 14 and Col. 11 Lines 6-15).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Hannigan in the watermarking system of Lee by producing sign information for the watermark based on the data to be embedded, and thus adding when a 1 was to be encoded and subtracting when a 0 was to be encoded. This would have been obvious because the ordinary person skilled in the art would have been motivated to enhance the delectability of the watermark and to reduce the perceptibility of the watermark.

Claims 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hannigan, and further in view of Hayashi et al. (US Patent Number 6,434,253) hereinafter referred to as Hayashi.

Regarding claim 9, Hannigan disclosed an apparatus for detecting a watermark from a watermarked audio signal using an echo signal of a delayed original audio that is delayed for a predetermined delay time (T), the apparatus comprising: a linear prediction analysis means for generating a prediction coefficient by means of the linear prediction analysis of the watermarked audio signal (See Hannigan Col. 12 Line 61 – Col. 13 Line 15); a linear prediction analysis filter for outputting a residual signal by eliminating an inherent spectrum of the original audio signal after filtering the watermarked audio signal using the prediction coefficient (See Hannigan Col.

12 Line 61 – Col. 13 Line 15); a short-time autocorrelation means for calculating an autocorrelation using the residual signal outputted from the linear prediction analysis filter (See Hannigan Col. 8 Lines 33-36); and a sign detection means for detecting the watermark information after detecting a sign of the value outputted from the short-time autocorrelation means (See Hannigan Col. 13 Lines 5-9). However, Hannigan did not disclose the watermark information including copyright information.

Hayashi teaches that audio watermarks can contain copyright information (See Hayashi Col. 1 Lines 32-35).

It would have been obvious to the ordinary person skilled in the art to employ the teachings of Hayashi in the audio watermarking system of Hannigan by placing copyright information in the audio watermark. This would have been obvious because the ordinary person skilled in the art would have been motivated to protect the copyrights of the audio data.

Regarding claim 10, the combination of Hannigan and Hayashi disclosed an error correction decoder for outputting the error- corrected copyright information through an error- correction decoding step after the resultant output sign detected from the sign detector 204 is inputted therein (See Hannigan Col. 13 Lines 21-23).

Regarding claim 11, the combination of Hannigan and Hayashi disclosed that the linear prediction analysis means generates the residual signal by combining the residual signal of the original audio signal and the residual signal of the delayed original signal (See Hannigan Col. 12 Line 61 – Col. 13 Line 15).

Regarding claim 12, the combination of Hannigan and Hayashi disclosed that the short-time autocorrelation means finds out the residual signal of the original audio signal and the

residual signal of the delayed original audio signal by calculating the autocorrelation of the residual signal (See Hannigan Col. 8 Lines 33-37).

Regarding claim 13, the combination of Hannigan and Hayashi disclosed that the sign detection means investigates a correlation sign of the residual signal of the original audio signal and the residual signal of the delayed original signal, thereby outputting an output value, i.e., 0 or 1, according to the correlation sign (See Hannigan Col. 13 Lines 1-9).

Regarding claim 14, see the rejection of claim 9 above.

Conclusion

Claims 1-14 have been rejected.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew T. Henning whose telephone number is (571) 272-3790. The examiner can normally be reached on M-F 8-4.


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1 If attempts to reach the examiner by telephone are unsuccessful, the examiner's
2 supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the
3 organization where this application or proceeding is assigned is 703-872-9306.

4 Information regarding the status of an application may be obtained from the Patent
5 Application Information Retrieval (PAIR) system. Status information for published applications
6 may be obtained from either Private PAIR or Public PAIR. Status information for unpublished
7 applications is available through Private PAIR only. For more information about the PAIR
8 system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR
9 system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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16 Matthew Henning
17 Assistant Patent Examiner
18 Art Unit 2131
19 8/18/2005


Primary Examiner
AU 2131
8/18/05